

REMARKS

The present application was filed on May 26, 2006 with claims 1 through 29. Claims 5, 6, 20, and 21 were cancelled in the Amendment After Final Rejection dated April 10, 2009. Claims 1-4, 7-19, and 22-29 are presently pending in the above-identified patent application.

In the Office Action, the Examiner rejected claims rejected claims 26-29 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, rejected claims 1-11, 13-15 and 16-25 under 35 U.S.C. §103(a) as being unpatentable over Perahia et al. (United States Patent No. 7,352,688) in view of Li et al. (United States Publication No. 2004/0258025; hereinafter ‘025) and further in view of Li et al. #2 (United States Publication No. 2003/0016621; hereinafter ‘621), rejected claim 12 under 35 U.S.C. §103(a) as being unpatentable over Perahia et al. in view of Li ‘025 and Li ‘621 as applied to claim 1 and further view of Gardner et al. (United States Publication No. 2005/0233709), and rejected claims 26-29 under 35 U.S.C. §103(a) as being unpatentable over Perahia et al. in view of Gardner et al. and further view of Li et al., Li ‘621.

Section 112 Rejections

Claims 26-29 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claims 26 and 29, the Examiner asserts that the phrase “can be” renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention.

Applicants note that claims 26 and 29 have been amended to change the phrase “can be interpreted” to “is capable of being interpreted” and therefore the limitation(s) following the phrase are part of the claimed invention. Applicants respectfully request that the section 112 rejections be withdrawn.

Independent Claims

Independent claims 1 and 16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Perahia et al. in view of Li ‘025 and further in view of Li ‘621, and claims 26 and 29 were rejected under 35 U.S.C. §103(a) as being unpatentable over Perahia et al. in view of Gardner et al. and further view of Li ‘025 and Li ‘621. Regarding claims 1 and 16, the

Examiner asserts that Li ‘621 discloses wherein each of the long training symbols are time orthogonal by introducing a phase shift between at least two of said training symbols (phase shift of the first and second training symbols, claims 5-7) transmitted on one of the N transmit antennas (FIG. 1; OFDM transmit antennas 130-1 to 130-N; paragraphs [0021] and [0023]).

5 Applicants note that, in the text cited by the Examiner, Li ‘621 teaches:

[0021] FIG. 1 is a block diagram of an exemplary transmission system 100. The transmission system 100 includes an encoder 110 having a number of associated OFDM transmitters 120-1, 120-2, . . . 120-N and respective transmit antennas 130-1, 130-2, . . . 130-N, and an equalizer 160 having a number of associated OFDM receivers 150-1, 150-2, . . . 150-M with respective receive antennas 140-1, 140-2, . . . 140-M.

[0023] As shown in FIG. 1, the radio-frequency signals 135 transmitted by each transmit antenna 130-1, 130-2, . . . 130-N can be subsequently received by each of the receiving antennas 140-1, 140-2, . . . 140-M. While FIG. 1 depicts the various communication channels as single direct paths between each transmit/receive antenna pair, it should be appreciated that each radio-frequency signal 135 can propagate from each transmit antenna 130-1, 130-2, . . . 130-N to each receive antenna 140-1, 140-2, . . . 140-M not only through a direct path, but can also propagate from each transmit antenna 130-1, 130-2, . . . 130-N to each receive antenna 140-1, 140-2, . . . 140-M through a variety of indirect paths (not shown).

Furthermore, claims 5-7 require, wherein at least one set of the one or more sets of second training symbols is substantially identical to the set of first training symbols with a phase shift, wherein every set of the one or more sets of second training symbols is substantially identical to the set of first training symbols with a respective phase shift, and wherein the first set of training signals is transmitted using a first transmit device and at least one of the one or more sets of second training signals is transmitted using a second transmitting device, respectively. Applicants find *no* disclosure or suggestion in Li ‘621 that *each of said long training symbols are time orthogonal by introducing a phase shift between at least two of said training symbols transmitted on one of said N transmit antennas*. To the contrary, Li ‘621 teaches that “*the exemplary sets of training symbols are transmitted according to an OFDM paradigm with the different sets of training symbols using different transmit antennas.*” (Paragraph [0074]; emphasis added.)

Thus, Perahia et al., Gardner et al., Li et al., and Li ‘621, alone or in combination, do not disclose or suggest wherein each of said long training symbols are time orthogonal by

introducing a phase shift between at least two of said training symbols transmitted on one of said N transmit antennas, as variously required by independent claims 1, 16, 26 and 29, as amended.

Dependent Claims

5 Dependent claims 2-4 and 7-15, claims 17-19 and 22-25 and claims 27-28 are dependent on independent claims 1, 16, and 26, respectively, and are therefore patentably distinguished over Perahia et al., Gardner et al., Li et al., and Li '621, alone or in combination, because of their dependency from amended independent claims 1, 16, and 26 for the reasons set forth above, as well as other elements these claims add in combination to their base claim.

Conclusion

10 All of the pending claims following entry of the amendments, i.e., claims 1-4, 7-19, and 22-29, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

15 The Examiner's attention to this matter is appreciated.

Respectfully submitted,



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